

INTERNATIONAL SEARCH REPORT

International application No

PCT/GB2007/000400

A. CLASSIFICATION OF SUBJECT MATTER

INV. B66C1/42 B66C23/52 E02B17/00 E04H12/34 F03D1/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B66C F03D E02B B63B E04H E02D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|---|
| X A | WO 03/066427 A (FRED OLSEN RENEWABLES LTD [GB]; STRUCTURAL ENGINEERING AS [NO]; OLSEN) 14 August 2003 (2003-08-14) the whole document page 9, line 17 - line 20 ----- | 1-3,9, 10,14-16 6-8,13, 20 |
| X Y | WO 02/48547 A1 (MAMMOET MARINE B V I O [NL]; SEEGER RAYMOND CHRISTIAAN [NL]; HOLTHAUS) 20 June 2002 (2002-06-20) the whole document ----- | 1,9,10 4,5,11, 12,17-19 |
| Y | US 2004/045226 A1 (DEHLSSEN JAMES G P [US] ET AL) 11 March 2004 (2004-03-11) paragraphs [0003], [0021], [0024] - [0026]; figures abstract ----- -/-- | 4,5,11, 12,17-19 |

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *8* document member of the same patent family

Date of the actual completion of the international search

30 May 2007

Date of mailing of the international search report

11/06/2007

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No

PCT/GB2007/000400

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|---|-----------------------|
| X | JP 2005 069025 A (MITSUI SHIPBUILDING ENG) 17 March 2005 (2005-03-17) abstract; figures ----- | 1, 9, 10 |
| X | NL 1 023 142 C1 (PRAXIS INGENIEURSBURO BV [NL]) 13 October 2004 (2004-10-13) figures ----- | 1 |
| A | WO 03/066426 A (MPU ENTPR AS [NO]; OLSEN TOR OLE [NO]; HAEREID KAARE [NO]; LANDBOE TRO) 14 August 2003 (2003-08-14) abstract; figures ----- | 1, 4, 9, 10 |
| P, X | WO 2006/076920 A (A2SEA AS [DK]; THOMSEN KURT ELITH [DK]) 27 July 2006 (2006-07-27) abstract; figures ----- | 1 |
| P, X | JP 2006 037397 A (KINSHO BUSSAN KK; CHOWA KOGYO KK) 9 February 2006 (2006-02-09) abstract; figures ----- | 1-5 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2007/000400

| Patent document cited in search report | | Publication date | Patent family member(s) | Publication date |
|---|----|---------------------|----------------------------|---------------------|
| WO 03066427 | A | 14-08-2003 | AU 2002239178 A1 | 02-09-2003 |
| WO 0248547 | A1 | 20-06-2002 | AT 355459 T | 15-03-2006 |
| | | | AU 1972102 A | 24-06-2002 |
| | | | EP 1356205 A1 | 29-10-2003 |
| | | | GB 2390632 A | 14-01-2004 |
| | | | NL 1016859 C2 | 14-06-2002 |
| | | | US 2004042876 A1 | 04-03-2004 |
| US 2004045226 | A1 | 11-03-2004 | NONE | |
| JP 2005069025 | A | 17-03-2005 | NONE | |
| NL 1023142 | C1 | 13-10-2004 | NONE | |
| WO 03066426 | A | 14-08-2003 | AU 2002364759 A1 | 02-09-2003 |
| | | | NO 20015692 A | 22-05-2003 |
| WO 2006076920 | A | 27-07-2006 | NONE | |
| JP 2006037397 | A | 09-02-2006 | NONE | |

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/GB2007/000400

International filing date (day/month/year)
06.02.2007

Priority date (day/month/year)
06.02.2006

International Patent Classification (IPC) or both national classification and IPC
INV. B66C1/42 B66C23/52 E02B17/00 E04H12/34 F03D1/00

Applicant
THE ENGINEERING BUSINESS LIMITED

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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Date of completion of
this opinion

see form
PCT/ISA/210

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/GB2007/000400

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - ☒ the international application in the language in which it was filed
 - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ on paper
 - ☐ in electronic form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in electronic form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/GB2007/000400

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|-------------|------------------------|
| Novelty (N) | Yes: Claims | <u>4-8,11-13,17-20</u> |
| | No: Claims | <u>1-3,9,10,14-16</u> |
| Inventive step (IS) | Yes: Claims | <u>6-8,13,20</u> |
| | No: Claims | <u>1-5,9-12,14-19</u> |
| Industrial applicability (IA) | Yes: Claims | <u>1-20</u> |
| | No: Claims | |

2. Citations and explanations

see separate sheet

Box No. VI Certain documents cited

1. Certain published documents (Rules 43bis.1 and 70.10)

and / or

2. Non-written disclosures (Rules 43bis.1 and 70.9)

see form 210

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

Reference is made to the following documents:

D1: WO 03/066427 A (FRED OLSEN RENEWABLES LTD [GB]; STRUCTURAL
ENGINEERING AS [NO]; OLSEN) 14 August 2003 (2003-08-14)

D2: WO 02/48547 A1 (MAMMOET MARINE B V I O [NL]; SEEGER'S RAYMOND
CHRISTIAAN [NL]; HOLTHAUS) 20 June 2002 (2002-06-20)

D3: US 2004/045226 A1 (DEHLSSEN JAMES G P [US] ET AL) 11 March 2004 (2004-03-
11)

D4: JP 2005 069025 A (MITSUI SHIPBUILDING ENG) 17 March 2005 (2005-03-17)

Electronic translation at:

[http://dossier1.ipdl.inpit.go.jp/AIPN/aipn_call_transl.ipdl?N0000=7413&N0120=01 &N2001=2&N3001=2005-069025](http://dossier1.ipdl.inpit.go.jp/AIPN/aipn_call_transl.ipdl?N0000=7413&N0120=01&N2001=2&N3001=2005-069025)

D5: NL-C1-1 023 142 (PRAXIS INGENIEURSBURO BV [NL]) 13 October 2004 (2004-10-
13)

1 Clarity

1.1) Although claims 1,4,9,10; 17 and 19 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought and in respect of the terminology used for the features of that subject-matter. The aforementioned claims therefore lack conciseness and as such do not meet the requirements of Article 6 PCT.

2 Claims 1-3

Novelty

2.1) The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1-3 is not new in the sense of Article 33(2) PCT.

2.2) The document D1 discloses (the references in parentheses applying to this document):

Apparatus for use in supporting an offshore structure (73) including a longitudinally extensive shaft, mast or tower, the apparatus comprising:

- a frame (54) including an engaging portion configured to engage the shaft, mast or tower,
- a plurality of legs (77) configured to rest on an underlying supporting surface and
- a plurality of lifting formations by which the frame may operatively be lifted,
- the frame being configured to support and carry the offshore structure with the shaft, mast or tower in a substantially upright condition.

2.3) D1 also includes the additional features of dependent claims 2 and 3 (see fig.20) where the lifting means (79) are included in the legs of the structure and are adjustable.

2.4) D2 also includes the features of independent claim 1.

2.5) D4 also includes the features of independent claim 1.

2.6) D5 also includes the features of independent claim 1.

3 Claims 4-8

Inventive step, negative

3.1) The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 4 and 5 does not involve an inventive step in the sense of Article 33(3) PCT.

3.2) The document D2 discloses (the references in parentheses applying to this document): Apparatus for transporting an offshore structure (10) including a longitudinally extensive shaft, mast or tower and for mounting the offshore structure on an offshore support base, the apparatus comprising:

a frame (22) including an engaging portion configured to engage the shaft, mast or tower, a plurality of legs (under platform 4) configured to rest on an underlying supporting surface and

a plurality of lifting formations by which the frame may operatively be lifted, the frame being configured to support and carry the offshore structure with the shaft, mast or tower in a substantially upright condition (fig.3)

a transporting vessel (20),

from which the subject-matter of claim 4 differs in that:

-the transporting vessel is provided with a pair of lifting cranes each having a lifting cable.

3.3) The problem to be solved by the present invention may therefore be regarded as an increase/stabilization of the lifting apparatus.

3.4) The solution proposed in claim 4 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) because these features have already been employed for the same purpose in a similar off-shore installation units, see for example D3, fig.2E and paragraphs 24-26. It would be obvious to the person skilled in the art, namely when the same result is to be achieved, to apply these features with corresponding effect to a method of mounting an off-shore structure according to document D2, thereby arriving at offshore apparatus according to claim 4.

3.5) The features of dependent claim 5 are merely several of straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill, in order to solve the problem posed (see D2 and D3).

Inventive step, positive

3.6) The combination of the features of dependent claims 6-8 is neither known from, nor rendered obvious by, the available prior art.

4 Claim 9

Novelty

4.1) The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 9 is not new in the sense of Article 33(2) PCT.

4.2) The document D2 discloses (the references in parentheses applying to this document): Offshore support apparatus for use in mounting in or on an offshore foundation an offshore structure including a longitudinally extensive shaft, mast or tower, the offshore structure being operatively carried with

- the shaft, mast or tower in a substantially upright condition in a frame (1) including an engaging portion (8) configured to engage the shaft, mast or tower,
- a plurality of legs (under platform 4) configured to rest on an underlying supporting surface and
- a plurality of lifting formations by which the frame may operatively be lifted,
- the offshore support apparatus comprising attachment means configured operatively to attach the offshore support apparatus to the offshore foundation, a support frame depending from the attachment means
- and a plurality of supporting formations equal in number to the number of legs of the frame and configured to support respective legs of the frame.

4.3) D1 also discloses the subject-matter of independent claim 9.

4.4) D4 also discloses the subject-matter of independent claim 9.

5 Claims 10-16

Novelty

5.1) The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 10,14-16 is not new in the sense of Article 33(2) PCT.

5.2) The document D1 discloses (the references in parentheses applying to this document): System for mounting, in or on an offshore foundation, an offshore structure including a longitudinally extensive shaft, mast or tower, the system comprising: a frame including an engaging portion configured to engage the shaft, mast or tower, a plurality of legs (77) configured to rest on an underlying supporting surface and a plurality of lifting formations by which the frame may operatively be lifted, the frame being configured to support and carry the offshore structure with the shaft, mast or tower in a substantially upright condition; and

- an offshore support apparatus comprising attachment means (84,87) configured operatively to attach the offshore support apparatus to the offshore foundation,
- a support frame depending from the attachment means and
- a plurality of supporting formations equal in number to the number of legs of the frame and configured to support respective legs of the frame.

5.3) D1 also discloses the additional subject-matter of dependent claims 14-16.

5.4) D2 discloses also the subject-matter of independent claim 10.

5.5) D4 discloses also the subject-matter of independent claim 10.

Inventive step, negative

5.6) The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 11 and 12 does not involve an inventive step in the sense of Article 33(3) PCT.

5.7) The solution proposed in claims 11 and 12 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) because these features have already been employed for the same purpose in a similar apparatus, see for example D3, Fig. 2F. It would be obvious to the person skilled in the art, namely when the same result is to be achieved, to apply these features with corresponding effect to a method of mounting an off-shore structure according to document D2, thereby arriving at offshore structure according to claims 11 and 12.

Inventive step, positive

5.8) The combination of the features of dependent claim 13 is neither known from, nor rendered obvious by, the available prior art.

6 Claims 17,18

Inventive step, negative

6.1) The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 17 and 18 does not involve an inventive step in the sense of Article 33(3) PCT.

6.2) The document D1 discloses (the references in parentheses applying to this document): A method of mounting an offshore structure (10) including a longitudinally extensive shaft, mast or tower on a transporting vessel, the method comprising:
- providing on land a frame (1) including an engaging portion configured to engage the

shaft, mast (8) or tower,

- a plurality of legs (under platform 4) configured to rest on an underlying supporting surface and
- a plurality of lifting formations by which the frame may operatively be lifted,
- securing the frame to the offshore structure; and
- connecting the lifting cables to the lifting formations of the frame;
- lifting the frame carrying the offshore structure from the land to the vessel such that at least some of the legs are supported by the deck of the vessel (22) and the offshore structure is retained in a substantially upright condition at least partially by the action of the cranes.

from which the subject-matter of claim 17 differs in that:

- the transporting vessel is provided with a pair of lifting cranes each having a lifting cable.

6.3) The problem to be solved by the present invention may therefore be regarded as an increase or stabilization of the lifting method.

6.4) The solution proposed in claim 17 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) because these features have already been employed for the same purpose in a similar off-shore installation units, see for example D3, paragraph 25. It would be obvious to the person skilled in the art, namely when the same result is to be achieved, to apply these features with corresponding effect to a method of mounting an off-shore structure according to document D2, thereby arriving at offshore structure according to claim 17.

6.5) Claim 18: The feature of the use of a spreader beam for mounting of a longitudinally extensive shaft, mast or tower is merely one of several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill.

7 Claims 19 and 20

Inventive step, negative

7.1) The present application does not meet the criteria of Article 33(1) PCT, because the

subject-matter of claim 19 does not involve an inventive step in the sense of Article 33(3) PCT.

7.2) Document D2 which is considered to represent the most relevant state of the art, discloses: A method of transferring an offshore structure including a longitudinally extensive shaft mast or tower from a transporting vessel to an offshore support foundation, the method comprising providing:

- a tower supporting apparatus including a frame arranged on the vessel and supporting the offshore structure, the frame comprising an engaging portion which engages the shaft, mast or tower, a plurality of legs at least some of which are supported on the deck of the vessel and
- a plurality of lifting formations by which the frame may operatively be lifted;
- a pair or lifting cranes on the transporting vessel, each crane having a lifting cable connected to the lifting formations of the frame;
- an offshore support apparatus comprising attachment means by which the offshore support apparatus is attached to the offshore foundation,
- a support frame depending from the attachment means and a plurality of supporting formations equal in number to the number of legs of the frame and configured to support respective legs of the frame the method comprising:
lifting the tower supporting apparatus and offshore structure from the vessel with the cranes and retaining the offshore structure with the shaft, mast or tower in a substantially upright configuration (page 6, lines 20 to page 7, line 2);
- moving the tower supporting apparatus carrying the offshore structure to a position above the offshore support foundation and aligning the legs of the frame with the support structures of the offshore support apparatus;
- lowering the offshore structure onto the offshore support base such that the legs are supported by the supporting formations of the offshore support apparatus;
and securing the offshore structure to the offshore support apparatus.

from which the subject-matter of claim 19 differs in that:

- a spreader beam mounted on the shaft, mast or tower and to which the lifting cables of the cranes are attached, the spreader beam being operatively moveable longitudinally with respect to the shaft, mast or tower;

7.3) The problem to be solved by the present invention may therefore be regarded as an improved hoisting method.

7.4) The solution proposed in claim 19 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) because these features have already been employed for the same purpose in a similar off-shore installation units, for example D3, Fig. 2B and 2F. It would be obvious to the person skilled in the art, namely when the same result is to be achieved, to apply these features with corresponding effect to a method of mounting an off-shore structure according to document D2, thereby arriving at offshore structure according to claim 19.

Inventive step. positive

7.5) The combination of the features of dependent claim 20 is neither known from, nor rendered obvious by, the available prior art.